

**Attachment C3**

Cost Estimate Worksheets

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**Temperance Flat Reservoir at RM 274  
(Chapter 3)**





CODE: D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

FEATURE:			PROJECT:				
<b>RM274 Dam Site</b> Elev. 800 Embankment			DIVISION:				
			FILE: P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274 1100				
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<b>CFRF Dam</b>					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	177,000	CY	\$6.50	\$1,150,500
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	12,000	CY	\$11.00	\$132,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	68,000	CY	\$6.50	\$442,000
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	93,200	CY	\$20.00	\$1,864,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	93,200	CY	\$19.50	\$1,817,400
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	2,352,000	CY	\$9.00	\$21,168,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	2,400,000	CY	\$8.75	\$21,000,000
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	31,500	CY	\$240.00	\$7,560,000
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	2,170	CY	\$240.00	\$520,800
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	9,750	anchors	\$40.00	\$390,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	2,000	CY	\$460.00	\$920,000
	130	Drilling for grout program (setup, drill, test), setups=455	8313	28,000	LF	\$33.00	\$924,000
	140	Grouting (grout injection into competent granite.	8313	21,000	bags	\$27.00	\$567,000
	150	Unwatering	8313	1	LS		\$1,500,000
		<b>Subtotal, CFRF Dam</b>					<b>\$59,955,700</b>
		<b>SUMMATION OF COSTS</b>					
		Diversion and Care of River					\$120,900,000
		Spillway					\$44,600,000
		Outlet Works					\$10,800,000
		Control House and Powerplant					\$87,200,000
		CFRF Dam					\$60,000,000
		Mobilization - 5%					\$16,000,000
		<b>Subtotal</b>					<b>\$339,500,000</b>
		Unlisted Items - 15%					\$50,500,000
		<b>Contract Cost</b>					<b>\$390,000,000</b>
		Contingencies - 30%					\$117,000,000
		<b>Field Cost</b>					<b>\$507,000,000</b>
<b>QUANTITIES</b>			<b>PRICES</b>				
BY	Mark Pabst	CHECKED	Mark Pabst	BY	R. Baumgarten	CHECKED	
DATE PREPARED	7/1/2003	APPROVED		DATE		PRICE LEVEL	Appraisal 03



**ESTIMATE WORKSHEET**

<b>FEATURE:</b>  RM274 Dam Site Elev. 865 (Interpolated) Concrete Faced Rockfill Dam (CFR)	<b>PROJECT:</b>
	<b>DIVISION:</b>
	<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joa ase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\IMP274 CFRF.xls\IMP274_800

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<b>OutletWorks</b>					
		Concrete in Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150
		Excavation of Outlet Shaft and Gate Structure		14,730	CY	\$280.00	\$4,124,400
		Rock Bolt Supports		600	Bolts	\$360.00	\$216,000
		Total Drilling for Rock Bolts		7,200	LF	\$20.00	\$144,000
		Concrete in Outlet Shaft and Gate Structure		6,530	CY	\$450.00	\$2,938,500
		Furnishing and Handling Cement		2,720	TONS	\$120.00	\$326,400
		Furnishing and Handling Reinforcement		1,446,000	LBS	\$0.65	\$939,900
		Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500
		<b>Outlet Works subtotal</b>					<b>\$10,750,850</b>
		<b>Powerplant</b>					
		Steel Pipe		15,645,753	LBS	\$1.50	\$23,468,630
		Valves, all Sizes and Types		4,749,280	LBS	\$4.53	\$21,530,069
		Hydraulic Control System		136,000	LBS	\$10.00	\$1,360,000
		Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500
		Excavation for Powerplant		426,800	CY	\$12.00	\$5,121,600
		Furnishing and Handling Cement		11,945	TONS	\$100.00	\$1,194,500
		Furnishing and Handling Reinforcement		4,632,133	LBS	\$0.60	\$2,779,280
		Turbines		1,920,800	LBS	\$6.50	\$12,485,200
		Generators		1,948,000	LBS	\$8.00	\$15,584,000
		Governors, Motors, etc.		3-Units	LS		\$3,600,000
		<b>Powerplant subtotal</b>					<b>\$101,945,779</b>

<b>QUANTITIES</b>		<b>PRICES</b>	
BY B. Foster	CHECKED S. Osgood 11/20/03	BY B. Foster	CHECKED S. Osgood 11/20/03
DATE PREPARED 11/10/2003	APPROVED	DATE 11/10/03	PRICE LEVEL Appraisal 03

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>FEATURE:</b>			<b>PROJECT:</b>					
RM274 Dam Site Elev. 865 (Interpolated) Embankment			USJRBSI					
			<b>DIVISION:</b>					
			<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaqui_n_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800					
<b>CFRF Dam</b>								
	20		Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	292,050	CY	\$6.18	\$1,803,409
	30		Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	23,483	CY	\$10.35	\$243,053
	40		Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	137,767	CY	\$6.39	\$880,559
	50		Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	146,457	CY	\$19.13	\$2,802,204
	60		Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	146,457	CY	\$18.63	\$2,728,976
	70		Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	4,789,067	CY	\$8.68	\$41,545,153
	80		Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	4,887,333	CY	\$8.43	\$41,175,783
	90		Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	60,696	CY	\$229.17	\$13,909,462
	100		Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	2,783	CY	\$229.17	\$637,809
	110		Anchor bars for toe slab (4' deep grouted into granite)	8313	13,052	anchors	\$40.00	\$522,080
	120		Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	2,568	CY	\$443.75	\$1,139,402
	130		Drilling for grout program (setup, drill, test), setups=1165	8313	37,425	LF	\$32.57	\$1,218,808
	140		Grouting (grout injection into competent granite.	8313	28,074	bags	\$25.92	\$727,589
	150		Unwatering	8313	1	LS		\$1,695,000
			<b>Subtotal, CFRF Dam</b>					<b>\$111,029,286</b>
			<b>SUMMATION OF COSTS</b>					
			Diversion and Care of River					\$120,900,000
			Spillway					\$39,500,000
			Outlet Works					\$10,800,000
			Powerplant					\$93,100,000
			CFRF Dam					\$111,000,000
			Mobilization - 5%					\$19,000,000
			<b>Subtotal</b>					<b>\$394,300,000</b>
			Unlisted Items - 15%					\$55,700,000
			<b>Contract Cost</b>					<b>\$450,000,000</b>
			Contingencies - 30%					\$140,000,000
			<b>Field Cost</b>					<b>\$590,000,000</b>
<b>QUANTITIES</b>				<b>PRICES</b>				
BY	B. Foster			CHECKED	S. Osgood 11/20/03			
DATE PREPARED	11/10/2003			APPROVED				
BY	B. Foster			CHECKED	S. Osgood 11/20/03			
DATE	11/10/03			PRICE LEVEL	Appraisal 03			



CODE: D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 3

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>FEATURE:</b>			<b>PROJECT:</b>					
RM274 Dam Site Elev. 960 (Interpolated) Concrete Faced Rockfill Dam (CFR)			<b>DIVISION:</b>					
			<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800					
<b>OutletWorks</b>								
Concrete in Outlet Works Intake Structure				3,110	CY	\$265.00	\$824,150	
Excavation of Outlet Shaft and Gate Structure				14,730	CY	\$280.00	\$4,124,400	
Rock Bolt Supports				600	Bolts	\$360.00	\$216,000	
Total Drilling for Rock Bolts				7,200	LF	\$20.00	\$144,000	
Concrete in Outlet Shaft and Gate Structure				6,530	CY	\$450.00	\$2,938,500	
Furnishing and Handling Cement				2,720	TONS	\$120.00	\$326,400	
Furnishing and Handling Reinforcement				1,446,000	LBS	\$0.65	\$939,900	
Outlet Works Trashracks				495,000	LBS	\$2.50	\$1,237,500	
<b>Outlet Works subtotal</b>							<b>\$10,750,850</b>	
<b>Powerplant</b>								
Steel Pipe				13,323,922	LBS	\$1.50	\$19,985,883	
Valves, all Sizes and Types				4,506,270	LBS	\$4.22	\$19,001,439	
Hydraulic Control System				126,500	LBS	\$10.00	\$1,265,000	
Concrete in Powerplant				42,350	CY	\$350.00	\$14,822,500	
Excavation for Powerplant				426,800	CY	\$12.00	\$5,121,600	
Furnishing and Handling Cement				11,945	TONS	\$100.00	\$1,194,500	
Furnishing and Handling Reinforcement				3,464,742	LBS	\$0.60	\$2,078,845	
Turbines				1,941,700	LBS	\$6.50	\$12,621,050	
Generators				1,682,000	LBS	\$8.00	\$13,456,000	
Governors, Motors, etc.				3-Units	LS		\$3,600,000	
<b>Powerplant subtotal</b>							<b>\$93,146,816</b>	
<b>QUANTITIES</b>				<b>PRICES</b>				
BY B. Foster		CHECKED S. Osgood 11/20/03		BY B. Foster		CHECKED S. Osgood 11/20/03		
DATE PREPARED 11/10/2003		APPROVED		DATE 11/10/03		PRICE LEVEL Appraisal 03		

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>FEATURE:</b>			<b>PROJECT:</b>					
RM274 Dam Site Elev. 960 (Interpolated) Embankment			USJRBSI					
			<b>DIVISION:</b>					
			<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800					
<b>CFRF Dam</b>								
	20		Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	460,200	CY	\$5.70	\$2,623,140
	30		Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	40,267	CY	\$9.40	\$378,507
	40		Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	239,733	CY	\$6.23	\$1,494,338
	50		Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	224,293	CY	\$17.87	\$4,007,374
	60		Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	224,293	CY	\$17.37	\$3,895,228
	70		Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	8,350,933	CY	\$8.20	\$68,477,653
	80		Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	8,522,667	CY	\$7.95	\$67,755,200
	90		Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	103,367	CY	\$213.33	\$22,051,556
	100		Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	3,679	CY	\$213.33	\$784,924
	110		Anchor bars for toe slab (4' deep grouted into granite)	8313	17,878	anchors	\$40.00	\$715,120
	120		Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	3,397	CY	\$420.00	\$1,426,880
	130		Drilling for grout program (setup, drill, test), setups=1165	8313	51,200	LF	\$31.93	\$1,634,987
	140		Grouting (grout injection into competent granite.	8313	38,413	bags	\$24.33	\$934,724
	150		Unwatering	8313	1	LS		\$1,980,000
			<b>Subtotal, CFRF Dam</b>					<b>\$178,159,631</b>
			<b>SUMMATION OF COSTS</b>					
			Diversion and Care of River					\$120,900,000
			Spillway					\$31,300,000
			Outlet Works					\$10,800,000
			Powerplant					\$101,900,000
			CFRF Dam					\$178,200,000
			Mobilization - 5%					\$22,000,000
			<b>Subtotal</b>					<b>\$465,100,000</b>
			Unlisted Items - 15%					\$64,900,000
			<b>Contract Cost</b>					<b>\$530,000,000</b>
			Contingencies - 30%					\$160,000,000
			<b>Field Cost</b>					<b>\$690,000,000</b>
<b>QUANTITIES</b>				<b>PRICES</b>				
BY		CHECKED		BY		CHECKED		
B. Foster		S. Osgood 11/20/03		B. Foster		S. Osgood 11/20/03		
DATE PREPARED		APPROVED		DATE		PRICE LEVEL		
11/10/2003				11/10/03		Appraisal 03		

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 1 OF 3

<b>FEATURE:</b>  RM274 Dam Site Elev. 985 (Interpolated) Concrete Faced Rockfill Dam (CFR)	<b>PROJECT:</b> USJRBSI
	<b>DIVISION:</b>
	<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	<b>Diversion and care of river</b>					
		Upstream Cofferdam (Crest @ El. 635)		1,892,500	CY	\$13.00	\$24,602,500
		Excavation for Left Abutment Diversion Tunnel		141,300	CY	\$145.00	\$20,488,500
		Concrete Liner for Left Abutment Diversion Tunnel		31,300	CY	\$260.00	\$8,138,000
		Rock Bolts - Left Abt. Div. Tunnel		3,270	Bolts	\$500.00	\$1,635,000
		Total Drilling - Left Abt. Div. Tunnel		58,860	LF	\$20.00	\$1,177,200
		Excavation for Right Abutment Diversion Tunnel		281,700	CY	\$140.00	\$39,438,000
		Concrete Liner for Right Abutment Diversion Tunnel		48,900	CY	\$260.00	\$12,714,000
		Rock Bolts - Right Abt. Div. Tunnel		3,050	Bolts	\$600.00	\$1,830,000
		Total Drilling - Right Abt. Div. Tunnel		70,150	LF	\$20.00	\$1,403,000
		Furnishing and Handling Cement		22,620	TONS	\$100.00	\$2,262,000
		Furnishing and Handling Reinforcement		12,030,000	LBS	\$0.60	\$7,218,000
		<b>Diversion and Care of River Subtotal</b>					<b>\$120,906,200</b>
		<b>Spillway</b>					
		Excavation for Spillway		2,975,667	CY	\$8.12	\$24,152,494
		Concrete in spillway crest		7,670	CY	\$180.00	\$1,380,600
		Concrete in spillway training walls and Apron		7,500	CY	\$210.00	\$1,575,000
		Furnishing and Handling Cement		4,280	TONS	\$110.00	\$470,800
		Furnishing and Handling Reinforcement		2,275,500	LBS	\$0.65	\$1,479,075
		<b>Spillway subtotal</b>					<b>\$29,057,969</b>

<b>QUANTITIES</b>				<b>PRICES</b>			
BY	CHECKED	BY	CHECKED	BY	CHECKED	BY	CHECKED
B. Foster	S. Osgood 11/20/03	B. Foster	S. Osgood 11/20/03	B. Foster	S. Osgood 11/20/03	B. Foster	S. Osgood 11/20/03
DATE PREPARED	APPROVED	DATE	PRICE LEVEL	DATE	PRICE LEVEL	DATE	PRICE LEVEL
11/10/2003		11/10/03	Appraisal 03	11/10/03	Appraisal 03	11/10/03	Appraisal 03

**ESTIMATE WORKSHEET**

<b>FEATURE:</b>  RM274 Dam Site Elev. 985 (Interpolated) Concrete Faced Rockfill Dam (CFR)	<b>PROJECT:</b>
	<b>DIVISION:</b>
	<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274 800

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<b>OutletWorks</b>					
		Concrete in Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150
		Excavation of Outlet Shaft and Gate Structure		14,730	CY	\$280.00	\$4,124,400
		Rock Bolt Supports		600	Bolts	\$360.00	\$216,000
		Total Drilling for Rock Bolts		7,200	LF	\$20.00	\$144,000
		Concrete in Outlet Shaft and Gate Structure		6,530	CY	\$450.00	\$2,938,500
		Furnishing and Handling Cement		2,720	TONS	\$120.00	\$326,400
		Furnishing and Handling Reinforcement		1,446,000	LBS	\$0.65	\$939,900
		Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500
		<b>Outlet Works subtotal</b>					<b>\$10,750,850</b>
		<b>Powerplant</b>					
		Steel Pipe		16,256,762	LBS	\$1.50	\$24,385,143
		Valves, all Sizes and Types		4,813,230	LBS	\$4.62	\$22,221,079
		Hydraulic Control System		138,500	LBS	\$10.00	\$1,385,000
		Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500
		Excavation for Powerplant		426,800	CY	\$12.00	\$5,121,600
		Furnishing and Handling Cement		11,945	TONS	\$100.00	\$1,194,500
		Furnishing and Handling Reinforcement		4,939,342	LBS	\$0.60	\$2,963,605
		Turbines		1,915,300	LBS	\$6.50	\$12,449,450
		Generators		2,018,000	LBS	\$8.00	\$16,144,000
		Governors, Motors, etc.		3-Units	LS		\$3,600,000
		<b>Powerplant subtotal</b>					<b>\$104,286,876</b>

<b>QUANTITIES</b>		<b>PRICES</b>	
BY B. Foster	CHECKED S. Osgood 11/20/03	BY B. Foster	CHECKED S. Osgood 11/20/03
DATE PREPARED 11/10/2003	APPROVED	DATE 11/10/03	PRICE LEVEL Appraisal 03

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>FEATURE:</b>			<b>PROJECT:</b>					
RM274 Dam Site Elev. 985 (Interpolated) Embankment			USJRBSI					
			<b>DIVISION:</b>					
			<b>FILE:</b> P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaqui_n_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800					
<b>CFRF Dam</b>								
	20		Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	504,450	CY	\$5.58	\$2,812,309
	30		Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	44,683	CY	\$9.15	\$408,853
	40		Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	266,567	CY	\$6.19	\$1,650,492
	50		Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	244,777	CY	\$17.53	\$4,291,751
	60		Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	244,777	CY	\$17.03	\$4,169,363
	70		Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	9,288,267	CY	\$8.08	\$75,002,753
	80		Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	9,479,333	CY	\$7.83	\$74,175,783
	90		Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	114,596	CY	\$209.17	\$23,969,628
	100		Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	3,915	CY	\$209.17	\$818,922
	110		Anchor bars for toe slab (4' deep grouted into granite)	8313	19,148	anchors	\$40.00	\$765,920
	120		Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	3,616	CY	\$413.75	\$1,495,982
	130		Drilling for grout program (setup, drill, test), setups=1165	8313	54,825	LF	\$31.77	\$1,741,608
	140		Grouting (grout injection into competent granite.	8313	41,134	bags	\$23.92	\$983,792
	150		Unwatering	8313	1	LS		\$2,055,000
			<b>Subtotal, CFRF Dam</b>					<b>\$194,342,156</b>
			<b>SUMMATION OF COSTS</b>					
			Diversion and Care of River					\$120,900,000
			Spillway					\$29,100,000
			Outlet Works					\$10,800,000
			Powerplant					\$104,300,000
			CFRF Dam					\$194,300,000
			Mobilization - 5%					\$23,000,000
			<b>Subtotal</b>					<b>\$482,400,000</b>
			Unlisted Items - 15%					\$67,600,000
			<b>Contract Cost</b>					<b>\$550,000,000</b>
			Contingencies - 30%					\$170,000,000
			<b>Field Cost</b>					<b>\$720,000,000</b>
<b>QUANTITIES</b>				<b>PRICES</b>				
BY	CHECKED			BY	CHECKED			
B. Foster	S. Osgood 11/20/03			B. Foster	S. Osgood 11/20/03			
DATE PREPARED	APPROVED			DATE	PRICE LEVEL			
11/10/2003				11/10/03	Appraisal 03			



CODE:D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 3

<b>FEATURE:</b>		<b>PROJECT:</b>					
RM274 Dam Site Elev. 1100 Concrete Faced Rockfill Dam (CFR)		<b>DIVISION:</b>					
		<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaq hase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800					
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<b>OutletWorks</b>					
		Concrete in Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150
		Excavatioon of Outlet Shaft and Gate Structure		14,730	CY	\$280.00	\$4,124,400
		Rock Bolt Supports		600	Bolts	\$360.00	\$216,000
		Total Drilling for Rock Bolts		7,200	LF	\$20.00	\$144,000
		Concrete in Outlet Shaft and Gate Structure		6,530	CY	\$450.00	\$2,938,500
		Furnishing and Handling Cement		2,720	TONS	\$120.00	\$326,400
		Furnishing and Handling Reinforcement		1,446,000	LBS	\$0.65	\$939,900
		Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500
		<b>Outlet Works subtotal</b>					<b>\$10,750,850</b>
		<b>Powerplant</b>					
		Steel Pipe		19,067,400	LBS	\$1.50	\$28,601,100
		Valves, all Sizes and Types		5,107,400	LBS	\$5.00	\$25,537,000
		Hydraulic Control System		150,000	LBS	\$10.00	\$1,500,000
		Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500
		Excavation for Powerplant		426,800	CY	\$12.00	\$5,121,600
		Furnishing and Handling Cement		11,945	TONS	\$100.00	\$1,194,500
		Furnishing and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500
		Turbines		1,890,000	LBS	\$6.50	\$12,285,000
		Generators		2,340,000	LBS	\$8.00	\$18,720,000
		Governors, Motors, etc.		3-Units	LS		\$3,600,000
		<b>Powerplant subtotal</b>					<b>\$115,193,200</b>
<b>QUANTITIES</b>			<b>PRICES</b>				
BY	CHECKED		BY	CHECKED			
S. Higinbotham			R. Baumgarten				
DATE PREPARED	APPROVED		DATE	PRICE LEVEL			
			09/09/200	Appraisal 03			

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

<b>FEATURE:</b>  RM274 Dam Site Elev. 1100 Embankment	<b>PROJECT:</b>
	<b>DIVISION:</b>
	<b>FILE:</b> P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaq hase_1\Documents\Surface Storage Option TMs\TM Temperance\Interpolated Costs\MP274 CFRF.xls\MP274_800

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<b>CFRF Dam</b>					
	20	Excavation - common (removal of alluvium, rock slope	8313	708,000	CY	\$5.00	\$3,540,000
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	65,000	CY	\$8.00	\$520,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	390,000	CY	\$6.00	\$2,340,000
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	339,000	CY	\$16.00	\$5,424,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	339,000	CY	\$15.50	\$5,254,500
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	13,600,000	CY	\$7.50	\$102,000,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	13,880,000	CY	\$7.25	\$100,630,000
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	166,250	CY	\$190.00	\$31,587,500
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	5,000	CY	\$190.00	\$950,000
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	24,990	anchors	\$40.00	\$999,600
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	4,620	CY	\$385.00	\$1,778,700
	130	Drilling for grout program (setup, drill, test), setups=1165	8313	71,500	LF	\$31.00	\$2,216,500
	140	Grouting (grout injection into competent granite.	8313	53,650	bags	\$22.00	\$1,180,300
	150	Unwatering (assumes 30 month construction)	8313	1	LS		\$2,400,000
		<b>Subtotal, CFRF Dam</b>					<b>\$260,821,100</b>
		<b>SUMMATION OF COSTS</b>					
		Diversion and Care of River					\$121,000,000
		Spillway					\$18,000,000
		Outlet Works					\$11,000,000
		Powerplant					\$115,000,000
		CFRF Dam					\$261,000,000
		Mobilization - 5%					\$26,300,000
		<b>Subtotal</b>					<b>\$552,300,000</b>
		Unlisted Items - 15%					\$87,700,000
		<b>Contract Cost</b>					<b>\$640,000,000</b>
		Contingencies - 30%					\$190,000,000
		<b>Field Cost</b>					<b>\$830,000,000</b>
<b>QUANTITIES</b>			<b>PRICES</b>				
BY	Mark Pabst	CHECKED	Mark Pabst	BY	R. Baumgarten	CHECKED	
DATE PREPARED	7/1/03	APPROVED		DATE	09/09/03	PRICE LEVEL	Appraisal 03

**TF274\_ADJ COSTS**

**RESERVOIR CONTRACT COST FOR VARIOUS TF274 STORAGE SIZES**

Description	Amount
<b>800 Foot CFR, including Powerhouse (from TF274_800_CFR_3)</b>	<b>\$390,000,000</b>
<b>40MW Powerhouse</b>	
RM274 PH (40MW), 2003 prices, from Phase 1 est. for 800 Foot CFR Dam	\$87,215,150
Less portion of pipes and valves attributable to O.W., from below	-\$28,166,995
Subtotal	\$59,048,155
Mobilization (5%)	\$3,000,000
Subtotal	\$62,048,155
Unlisted items (~15%)	\$8,951,845
<b>Powerhouse Contract Cost</b>	<b>\$71,000,000</b>
<b>Contract Costs for RM274 800 Foot CFR Dam, excluding 40MW Powerhouse (Jul-2003 cost)</b>	<b>\$320,000,000</b>
<b>865 Foot CFR, including Powerhouse (from TF274_865_CFR_3)</b>	<b>\$450,000,000</b>
<b>40MW Powerhouse</b>	
RM274 PH (40MW), 2003 prices, from Phase 1 est. for 865 Foot CFR Dam	\$87,215,150
Less portion of pipes and valves attributable to O.W., from below	-\$28,166,995
Subtotal	\$59,048,155
Mobilization (5%)	\$3,000,000
Subtotal	\$62,048,155
Unlisted items (~15%)	\$8,951,845
<b>Powerhouse Contract Cost</b>	<b>\$71,000,000</b>
<b>Contract Cost for RM274 865 Foot CFR Dam, excluding 40MW Powerhouse (Jul-2003 costs)</b>	<b>\$379,000,000</b>
<b>960 Foot CFR, including Powerhouse (from TF274_960_CFR_3)</b>	<b>\$530,000,000</b>
<b>50MW Powerhouse</b>	
40MW Powerhouse Contract Cost (reference above)	\$71,000,000
60MW Powerhouse Contract Cost (reference below)	\$89,000,000
<b>Powerhouse Average Contract Cost</b>	<b>\$80,000,000</b>
<b>Contract Cost for RM274 960 Foot CFR Dam, excluding 50MW Powerhouse (Jul-2003 costs)</b>	<b>\$450,000,000</b>
<b>985 Foot CFR, including Powerhouse (from TF274_985_CFR_3)</b>	<b>\$550,000,000</b>
<b>50MW Powerhouse</b>	
40MW Powerhouse Contract Cost (reference above)	\$71,000,000
60MW Powerhouse Contract Cost (reference below)	\$89,000,000
<b>Powerhouse Average Contract Cost</b>	<b>\$80,000,000</b>
<b>Contract Cost for RM274 985 Foot CFR Dam, excluding 50MW Powerhouse (Jul-2003 costs)</b>	<b>\$470,000,000</b>
<b>1100 Foot CFR, including Powerhouse (from TF274_1100_CFR_3)</b>	<b>\$640,000,000</b>
<b>60MW Powerhouse</b>	
RM274 PH (60MW), 2003 prices, from Phase 1 est. for 1100 Foot CFR Dam	\$115,193,200
Less portion of pipes and valves attributable to O.W., from below	-\$41,249,925
Subtotal	\$73,943,275
Mobilization (5%)	\$3,700,000
Subtotal	\$77,643,275
Unlisted items (~15%)	\$11,356,725
<b>Powerhouse Contract Cost</b>	<b>\$89,000,000</b>
<b>Contract Cost for RM274 1100 Foot CFR Dam, excluding 60MW Powerhouse (Jul-2003 costs)</b>	<b>\$550,000,000</b>

	Capacity (MW)	% to PH	% to OW
(reference TF286_ADJ COSTS_1)	180	41%	59%
(reference TF286_ADJ COSTS_1)	40	19%	81%
(reference TF286_ADJ COSTS_1)	60	24%	76%
(reference TF286_ADJ COSTS_1)	80	27%	73%
<b>For 800 Foot CFR Dam (w/ 40MW PH), Jul-2003 costs</b>			
Steel pipe, from Phase 1 est. for 800 Foot CFR Dam			\$17,602,965
Valves, from Phase 1 est. for 800 Foot CFR Dam			\$17,360,000
Subtotal, pipe and valves			\$34,962,965
Portion of pipes and valves attributable to O.W.			\$28,166,995
Portion of pipes and valves attributable to 40MW PH			\$6,795,970
<b>For 1100 Foot CFR Dam (w/ 60MW PH), Jul-2003 costs</b>			
Steel pipe, from Phase 1 est. for 1100 Foot CFR Dam			\$28,601,115
Valves, from Phase 1 est. for 1100 Foot CFR Dam			\$25,537,000
Subtotal, pipe and valves			\$54,138,115
Portion of pipes and valves attributable to O.W.			\$41,249,925
Portion of pipes and valves attributable to 60MW PH			\$12,888,190

**CONTRACT COST FOR NEW POWERHOUSE AT RM274**

	40MW Contrat Cost (from above)	\$71,000,000
	60MW Contrat Cost (from above)	\$89,000,000
<b>Description</b>	<b>Amount</b>	
<b>80MW Powerhouse</b>		
Conversion Factor (square root of MW ratio)		1.41
<b>Adjusted Contract Cost for 80MW Powerhouse at RM274 (Jul-2003 costs)</b>		<b>\$100,000,000</b>
<b>100MW Powerhouse</b>		
Conversion Factor (square root of MW ratio)		1.29
<b>Adjusted Contract Cost for 100MW Powerhouse at RM274 (Jul-2003 costs)</b>		<b>\$115,000,000</b>